

Continued

Objective: Maintain Best In Class Availability and Performance

Initiative: Develop and Implement QA/QC Plan For Turbine Bucket Replacement

History: IPSC Technical Services serves in a quality assurance/quality control (QA/QC) role for turbine generator maintenance. Initially IPSC worked with the turbine generator manufacturer, General Electric (GE), to develop an extensive program to document equipment inspections, repairs, and component replacements. The Turbine Generator QA/QC program ensures that critical procedures and processes, key measurements and dimensions, and checkoffs are documented, reviewed and approved. This program is continually updated to incorporate lessons learned from each maintenance activity. The QA/QC plan helps to ensure unit reliability. When significant modifications or repairs are required on the turbine-generator, IPSC updates the QA/QC plan to include best practices for the scheduled work.

Currently, the LP turbine last stage blades (LSB) or L-0 buckets require replacement because of steam erosion notching under the bucket covers. This erosion is caused by the steam starting to condense as it passes through the LP turbines. Several GE LP turbines, including PacifiCorp Huntington Unit 1, have developed cracks from stress risers at the notches caused by erosion. The incident at Huntington required a 30-day unscheduled outage to perform temporary repairs. Another planned outage was required for final repairs.

Status: IPSC has been monitoring the LP turbine LSB steam notching by performing visual inspections and NDE magnetic particle testing during major outages. During the Spring 2007 outage, GE recommended replacing the LSB during the next scheduled outage. IPSC concurred, but decided to change the GE LSB design after talking to utility experts. GE's recommendation was to replace the LSB with the same self-shielded Jethete material design which was prone to cracking. IPSC decided to use the existing bucket design, but with an electronic beam welded Stellite shield attachment to the outer tip for improved reliability.

Intermountain LP Turbine LSB will be replaced on Unit 2 during the October 2010 outage and on Unit 1 during the March 2011 outage. Toshiba was awarded the LP Turbine LSB replacement contract based on value.

A QA/QC program was developed jointly with Toshiba and Intermountain. This plan is in place.